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Milestone 5, Volume 2

Preliminary Operating Procedures

for the Bird Buffer System

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OFFICE OF THE
DIRECTOR

TECHNICAL MEMORANDUM

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Milestone 5, Volume 2

Preliminary Operating Procedures
for the Bird Buffer System

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5 March 1963

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1.0 INTRODUCTION

1.1 The Bird Buffer Program.

The entire group of operational programs contained on the Bird Buffer Master Tape (herein referred to as the "Bird Buffer Program"), has essentially two phases of operation: bird-contact and non-bird-contact. The bird-contact mode begins after a "real time near" message is received from a site, and any prepass data not previously sent has been transferred. It continues until the site transmits either a "fade" or "transmission ending" message. Only those jobs described under 3.0 will be processed in the bird-contact mode.

Any time which is not bird-contact is defined as non-bird-contact, regardless of whether or not the Bird Buffer is connected to a site. Only those jobs described under 2.0 will be processed in the non-bird-contact mode.

1.1.1 Error Checking.

Error checks are made by the program on each card input. Cards which are not control cards (i.e., which do not contain double asterisk in Cols. 1-2) are ignored.

Control cards are logged on the Bird Buffer Printer, then checked further to determine whether: a non-existent job (Cols. 3-4) has been requested; the vehicle number (if any) is different from that on the previous INITIALIZE card; a non-decimal value appears where a decimal digit is expected; a non-octal value appears where an octal digit is expected; the tape unit or the printer requested (if any) does not exist. If any of these conditions are present, the control card is ignored and the operator is notified by an ERROR IN JOB CARD printout. The program does not halt. If more cards are in the reader, the next card will be read in and similarly checked.

1.1.2 Order of Processing.

The Bird Buffer Program will process only one job request at a time. That is, after a control card which defines a legal job request is entered, no more control cards will be accepted until that job has been completed.

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1.1.3 Changing Vehicles.

The Bird Buffer is "vehicle-specific;" that is, it identifies with the vehicle whose number appears on the INITIALIZE card. If data from another vehicle is to be processed, the Bird Buffer Program must first be read in from tape before the new INITIALIZE card is entered. (This may be done by a CLEAR and RUN from zero, since the Bird Buffer Bootstrap remains in core at all times.)

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1.2 Tape Procedures.

1.2.1 Anytime the Bird Buffer is initialized, the tape drives should be set up in the following manner:

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 2 - The Prepass Tape; or if no Prepass Tape exists, a blank tape.
- c) Tape Unit 3 - A blank tape.
- d) Tape Unit 4 - The Recording Tape; or if no Recording Tape exists, a blank tape.

1.2.2 The program determines whether tape units 2 or 4 contain a blank tape or a tape with data from the contents of the INITIALIZE card. It is essential that the proper INITIALIZE card be entered, since an error here could cause a data tape to be written over.

1.2.3 Anytime the Prepass Tape is updated or the Recording Tape is filled, the program will switch these tapes to another unit. Hence, once the system is cycling, the Prepass Tape, the Recording Tape, and the blank tape can be on any combination of tape units 2, 3, and 4. When the location of the Prepass Tape or the Recording Tape changes, a printout on the Bird Buffer Printer will tell the operator which unit the tape was switched to. Write lockout should not normally be imposed on units 2, 3, or 4. If a Recording Tape is filled, the program will leave the completed tape in the rewind unload position. If the Prepass Tape is being updated, but the job cannot be completed because of a tape error, the job will be aborted with an appropriate error printout. If the Recording Tape is found not ready when its status is initially sensed, the program will halt with an appropriate printout. If this occurs, a blank tape must be put on the proper unit. If the program senses a write parity on the Recording Tape, it will give an error printout, but will not halt.

In general, the operator should always know the condition of the tape units from the error or status printouts.

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1.3 Card Read Procedures.

1.3.1 When cards are to be placed in the card reader, the following steps must be taken:

- a) Motor Power must be on.
- b) The Row 12 "0" Chk Disable switch must be on.
- c) The H → BCD and Pack switch must be off.
- d) The Stop Switch should be on.
- d) The cards are placed in the card reader upside down and Column 1 of the card to the left. After the glass cover is put on the cards, the Stop Switch should be set off and the card reader will read all cards in the hopper. In order to minimize card jams and read failures, cards should never be placed in the card reader without the Stop Switch on.

1.3.2 If the read was successful, the control card will be logged on the Bird Buffer Printer; if it was unsuccessful, the card is not logged but CARD READ ERROR is printed. The operator should now put the Stop Switch on, remove the cards from the hopper, and examine them to determine the cause of the error. Usually, a bent card is responsible, and repunching of that card will solve the problem. However, if the operator can see nothing wrong with the card, he should make a mental note of this, and repeat the operation starting with Step 5. Continued errors should be brought to the attention of a CDC engineer.

1.3.3 The operator must be careful when an error occurs, for sometimes the card is fed through to the stacker and sometimes not. The last card in the stacker should be compared against the Bird Buffer Printer output to determine this. It is always necessary to remove any remaining cards from the hopper when CARD READ ERROR is printed. (This message is printed anytime a card feed failure occurs.) The cards may then be put back into the hopper at the operator's convenience. The program will not read succeeding cards unless this is done.

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1.4 STARTING THE BIRD BUFFER PROGRAM.

This section describes the procedures used for reading the Bird Buffer Program into the 160A and beginning operations with it.

1.4.1 Inputs.

- a) The Bird Buffer Master Tape.
- b) A paper tape containing the Bird Buffer Bootstrap program.

1.4.2 Operator Actions.

- a) Make certain that the Bird Buffer Master Tape is on tape unit 1 and the unit is ready. Also make certain that the Bird Buffer Printer is ready.
- b) Depress the CLEAR switch at the computer console.
- c) Enter 7700 in the P register.
- d) Turn on the paper tape reader and set it for seven-level tape.
- e) Place the Bird Buffer Bootstrap in the reader, raise the LOAD switch and place the RUN/STEP switch in the RUN position.
- f) If there are octal corrector cards or parameters to be read in at this time, jump key 1 must be raised and the octals placed in the card reader.
- g) Depress the CLEAR switch and raise the RUN switch. If jump key 1 was raised, the octals will be read in and the program will begin operation. If there are no octals, the program will simply begin operation.

1.4.3 Error Conditions and Status Printouts.

- a) INITIALIZE BB.... This is the normal printout for the program. The operator should now initialize the Bird Buffer (see 2.1).
- b) If octals are being read, the program that reads them in may stop reading for two reasons: 1) the card reader is not ready, or 2) an octal card contains an error in one of the columns. There will be no printout for these conditions, but the operator will know they have occurred because the computer will stop after the

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last RUN setting and before the INITIALIZE BB.... printout. If the reader is not ready, make it ready and raise the RUN switch. If there is a card error, correct the card, replace it in the reader and raise the RUN switch.

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2.0 NON-REAL-TIME JOBS

2.1 INITIALIZE.

The Bird Buffer Program requires that an INITIALIZE card be read in via the 167 card reader prior to operation of any other job. This card must be inserted twice a day as soon after midnight or noon as is practical. It may also be entered at any other time the Bird Buffer Program is in core, to change the date or AM/PM setting.

2.1.1 Tape Usage. Not applicable.

2.1.2 Control Card Format.

Cols. 1-4	**00	Identifies the card as an INITIALIZE card.
5-6	blank	Always blank.
7-10	VVVV	Contains the vehicle number, in decimal.
11-12	blank	Always blank.
13-20	MM/DD/YY	Contains the present month, day, and year; all decimal, and separated by slashes.
21-22	blank	Always blank.
23-24	AM or PM	Usually indicates whether it is morning or afternoon when the INITIALIZE card is entered. (See 2.1.6.)
25-26	blank	Always blank.
27-28	PT or blank	Indicates whether a new Prepass Tape should be made up for this vehicle. If blank, a Prepass Tape exists. If PT, a new Prepass Tape should be made up (new vehicles only).
29-30	blank	Always blank.
31-32	RT or blank	Indicates whether a new Recording Tape should be made up for this vehicle. If blank, a Recording Tape exists, and will be mounted when needed by the programs. If RT, a Recording Tape should be made up (new vehicles only).

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Cols. 33-80

Ignored by the Bird Buffer Program--may be used for further identifying information if desired.

2.1.3 Inputs and Environment.

- a) The only input is the INITIALIZE card.
- b) The Bird Buffer Printer must be ready.
- c) The Bird Buffer Program must be in the computer.

2.1.4 Operator Actions.

- a) Ready the printer if not ready.
- b) Place the control card in the reader and ready the reader. No further action should be necessary.

2.1.5 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (Cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that a control card has been read in that is not an INITIALIZE card and the system has not yet been initialized. The card should be removed and an INITIALIZE card prepared and fed into the computer via the 167 card reader.

2.1.6 Restrictions.

- a) The month, day, year and AM/PM indicator must be set to correspond with the time to which the data to be processed is related. Normally, this will be the "current" time, since real time operations will be taking place. However, where data is "played back" to the Bird Buffer from storage sources at a tracking station, care must be taken to insure that the above restriction is met.
- b) The INITIALIZE card must be entered at least once every 12 hours to advance the date or AM/PM setting.

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2.2 TRANSFER TRK.

The Bird Buffer Program will transfer to the 1604 any or all tracking and vehicle time data on the Recording Tape.

2.2.1 Tape Usage.

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) The Recording Tape which was used during the pass from which the tracking history is desired should be placed on the tape drive currently designated for the Recording Tape.

2.2.2 Control Card Format.

Cols. 1-4	**01	Identifies the card as a Transfer Tracking History card.
5-6	blank	Always blank.
7-10	VVVV	Contains the number of the vehicle from which data is to be processed, in decimal.
11-12	blank	Always blank.
13-16 or blank	RRRR	May contain a revolution number or may be left blank. If a revolution number is present, it indicates the first revolution to be transferred. If blank, NN passes (see Cols. 23-24) from the beginning of the tape will be transferred.
17-18	blank	Always blank.
19-20	SS or blank	May contain a site number or may be left blank. If a site number is specified, the Cols. 13-16 must contain a revolution number. This revolution number and site number together specify a unique pass, which will be the first pass processed from the Recording Tape. The total number of passes processed is determined by Cols. 23-24.
21-22	blank	Always blank.

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Cols. 23-24	NN or blank	May contain the number of passes to be processed, or may be blank. If blank, all passes on tape will be processed, beginning with the pass specified in the previous columns.
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25-80		These columns are ignored by the program and may be used for further card identification if desired.
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2.2.3 Inputs and Environment.

- a) The only inputs required are the Recording Tape and the control card.
- b) The Bird Buffer Program must be in the computer and operating in the non-bird-contact mode.
- c) The Bird Buffer Printer should be ready at all times.

2.2.4 Operator Actions.

- a) Place the Recording Tape on the proper unit and make the unit ready.
- b) Check the Bird Buffer Printer to make certain it is ready.
- c) Place the control card in the reader and make the reader ready. No further action should be necessary.

2.2.5 Error Conditions and Status Printouts.

- a) **ERROR IN JOB CARD.** This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (Cols. 3-4) has been requested; the vehicle number is different from that on the previous INITIALIZE card; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- b) **BIRD BUFFER NOT INIT.** This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the program and reinitiate the job.
- c) **ILLEGAL JOB REQUEST.** This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Reinitiate the job when the program is in the non-bird-contact mode.

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- d) READY TAPE UNIT X. This printout occurs when the Recording Tape is not ready. X will be the number of the tape unit. The program will halt. The tape must be made ready and the RUN/STEP switch placed in the RUN position. The program will continue from where it halted.
- e) PLACE NEW TAPE ON X. This printout means that the program has used all of the data on the Recording Tape but has not processed all the data it should. In other words, it expects to find more data on another tape. The program will halt to allow the operator to replace the tape with the new Recording Tape. After the Recording Tape unit is made ready, the RUN/STEP switch should be placed in the RUN position. The program will now process the new Recording Tape. (If it is desired to terminate the job instead of processing an additional Recording Tape, load the A register with 7777 and place the RUN/STEP switch in the RUN position.)
- f) READ PARITY TAPE X. This indicates that the computer detected a parity while reading the tape. The program will not halt nor will record containing the parity be transferred to the 1604. The program will, instead, go on to the next record. The operator must use his own judgement to determine if the frequency of parity occurrence becomes critical.
- g) NO RESPONSE-1604. This indicates that the program is unable to establish contact with the 1604 and therefore cannot complete the requested transfer. The program will halt. In order to attempt the transfer again, the RUN/STEP switch must be placed in RUN position. The program will continue from where it halted and again attempt to make the transfer.
- h) NOT FOUND. This printout indicates that the data requested on the control card was not found on the Recording Tape. Either the wrong information has been punched on the card or the wrong Recording Tape is on the tape drive.
- i) JOB COMPLETE. This indicates that the job is complete. The program will position the Recording Tape at the double end of file mark.
- j) 1604 TRANSFER ERRS. This printout indicates that there are persistent checksum errors in the data being transferred to the 1604. The record containing the checksum error will be skipped and not transferred.

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- k) FORMAT ERR TAPE X. This printout means that the first record of tape unit X contains either the wrong identification or the wrong vehicle number. Correction procedure is as described in Section e) above.

2.2.6 Restrictions. The Bird Buffer must be in the non-bird-contact mode.

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2.3 TRANSFER PREPASS.

The Bird Buffer Program will transfer prepass data from the 1604 computer to the Prepass Tape.

2.3.1 Tape Usage:

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 2 - Initially, the Prepass Tape, if one exists; or a blank tape.
- c) Tape Unit 3 - Initially, a blank tape. If this is not the first job request then all tape units should remain unchanged from the previous job.

2.3.2 Control Card Format.

Cols. 1-4	**02	Identifies the card as a Transfer Prepass card.
5-6	blank	Always blank.
7-10	VVVV	Vehicle number, in decimal.
11-12	blank	Always blank.
13-16	RERR or blank	May contain a revolution number or may be blank. If blank, all prepass data for the specified vehicle will be transferred. If a revolution number is specified, only prepass data for that revolution will be transferred.
17-18	blank	Always blank.
19-20	SS or blank	May be blank or may contain a site number. If blank, all prepass data for the specified vehicle will be transferred. If cols. 19-20 contain a site number, only prepass data for that site will be transferred.
21-80		These columns are ignored by the program and may be used for further card identification if desired.

2.3.3 Inputs and Environment.

- a) The only inputs required are the Prepass Tape (if one exists), a blank tape, and the control card.
- b) The Bird Buffer must be connected to the proper 1604 computer which must be operating in the satellite mode.
- c) The Bird Buffer Program must be cycling in the non-bird-contact mode.
- d) The Bird Buffer Printer should be operating so it can receive any error or status printouts.

2.3.4 Operator Actions.

- a) Insure that the Bird Buffer is connected to the proper 1604 computer.
- b) If this is the first job, place the tapes on the proper units and make the units ready.
- c) Check the Bird Buffer Printer to make sure it is ready.
- d) Place control card in the reader and ready the reader.
- e) Inspect any printouts on the Bird Buffer Printer to see if the job was successfully completed.

2.3.5 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (cols. 3-4) has been requested; the vehicle number is different from that on the previous INITIALIZE card; a non-decimal value appears where a decimal digit is expected. Correct the card and re-initiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and re-initiate the job.
- c) ILLEGAL JOB REQUEST. This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Re-initiate the job when the Program is in the non-bird-contact mode.

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- d) READY TAPE UNIT X. This printout occurs if a tape unit that is being used goes not ready. X will be the number of the tape unit. The computer will not halt on this condition, and the job will have to be reinitiated after the tape unit is made ready.
- e) READ PARITY TAPE X. This printout means that a parity occurred on a tape unit that was being read. X will be the number of the tape unit. The condition can probably be corrected by moving the tape to another unit (making sure that the logical tape number of this drive is altered as well). The computer will not halt. The job will have to be reinitiated after the error has been rectified.
- f) WRITE PARITY TAPE X. This printout means that a parity occurred while a record was being written on tape. X will be the number of the tape unit. This situation can probably be corrected by replacing the tape. The computer will not halt, and the job will have to be reinitiated after the error has been corrected.
- g) NO RESPONSE - 1604. This printout means that the 1604 computer did not answer the interrupt from the 160A. The job will have to be reinitiated after the 1604 computer is available for the transfer.
- h) NO DATA FROM 1604. This printout means that the 1604 computer has no data of the type requested by the 160A. The job will have to be reinitiated after this situation is corrected.
- i) 1604 TRANSFER ERRS. This printout indicates that there are persistent checksum errors in the data being transferred from the 1604. The job will have to be reinitiated after this equipment malfunction is corrected.
- j) 1604 DATA ERROR. This printout indicates that the data received from the 1604 is of the wrong format. The job will have to be reinitiated after the cause of this inconsistency is corrected.
- k) FORMAT ERR TAPE X. This printout means that the first record of tape unit X contains either the wrong identification or the wrong vehicle number. X will be the number of the tape unit. The job must be reinitiated after the proper prepass tape is placed on unit X.

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- 1) JOB COMPLETED. This printout occurs at the completion of the job. If the job was successful there will be no error printouts preceding this one. If the job was completed unsuccessfully, error printouts will precede the JOB COMPLETE printout.
- m) PREPASS TAPE UNIT. This printout states which drive the new Prepass Tape is on. X will be the number of the tape unit. The tape unit number may be the same as the original unit, or it may be different.

2.3.6 Restrictions.

The Bird Buffer Program must be in the non-bird-contact mode of operation.

2.4 COMMAND HISTORY.

The Bird Buffer Program will, on request, give a time-sequenced printout of all Command Operational Status Reports recorded on magnetic tape during a particular pass.

2.4.1 Tape Usage.

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 4 - The Recording Tape which was used during the pass from which the command history is desired.

2.4.2 Control Card Format.

Cols. 1-4	**03	Identifies the card as a Command History card.
5-6	blank	Always blank.
7-10	VVVV	Contains the number of the vehicle from which data is to be processed.
11-12	blank	Always blank.
13-16	RRRR or blank	May be blank or may contain a revolution number. If a revolution number appears, it will be the first revolution on the tape to be processed. If blank, NN passes (see Cols. 23-24) from the beginning of the tape will be processed.
17-18	blank	Always blank.
19-20	SS or blank	May contain a site number or may be blank. If a site number is specified, then Cols. 13-16 must contain a revolution number. Cols. 13-16 and 19-20 together specify a unique pass. This pass will be the first pass processed from the Recording Tape. The total number of passes processed is determined by Cols. 23-24.
21-22	blank	Always blank.
23-24	NN or blank	May contain the number of passes to be processed or may be left blank. If blank, all passes on tape beginning with the pass specified in the previous columns will be processed.

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Cols. 25 blank Always blank.

26 P Must always have one of the following numbers corresponding to the printer or printers on which the history is to be put out. (Anything printed on the Data Analysis Printer will also appear on the Multi-ops Printer.)

- 1 = Data Analysis (DA)
- 2 = Data Presentation (DP)
- 3 = DA and DP
- 4 = Bird Buffer (BB)
- 5 = DA and BB
- 6 = DP and BB
- 7 = DA, DP and BB

27-80 These columns are ignored by the program and may be used for further card identification if desired.

2.4.3 Inputs and Environment.

- a) The only inputs required are the Recording Tape and the control card.
- b) The printer(s) which are to receive the output should be ready to operate.
- c) The Bird Buffer Program must be in the computer and operating in the non-bird-contact mode.
- d) The Bird Buffer Printer should be ready at all times.

2.4.4 Operator Actions.

- a) Place the tapes on the proper drives and make them ready.
- b) Check all printers to be used and make certain they are ready.
- c) Place the control card in the reader and ready the reader. No further action should be necessary.

2.4.5 Error Conditions and Status Printouts.

- a) **ERROR IN JOB CARD.** This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (Cols. 3-4) has been requested; the vehicle number is different from that on the previous INITIALIZE card; a non-decimal value appears where a decimal digit is expected; the printer requested does not exist. Correct the card and reinitiate the job.
- b) **BIRD BUFFER NOT INIT.** This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the program and reinitiate the job.
- c) **ILLEGAL JOB REQUEST.** This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Reinitiate the job when the program is in the non-bird-contact mode.
- d) **ERROR PRINTER X.** If any printer other than the Bird Buffer Printer is initially not ready, or goes not ready during the job, this printout will occur on the Bird Buffer Printer. X is the number of the printer in error (see paragraph 3.8). The program will halt. The printer should be made ready and the RUN/STEP switch placed in the RUN position. The program will continue from where it halted.
- e) **READY TAPE UNIT X.** This printout occurs when the Recording Tape is not ready. X will be the number of the tape unit. The program will halt. The tape must be made ready and the RUN/STEP switch placed in the RUN position. The program will continue from where it halted.
- f) **PLACE NEW TAPE ON X.** This printout means that the program has used the last of the data on the tape but has not processed all the data it should. In other words, it expects to find more data on another tape. The program will halt to allow the operator to replace the tape with the new Recording Tape. After the new tape is made ready, the RUN/STEP switch should be placed in the RUN position. The program will not process the new Recording Tape.
- g) **READ PARITY TAPE X.** This indicates that the computer detected a parity while reading the tape. The program will halt. If the RUN/STEP switch is placed in the RUN position, the record containing the parity will be ignored and the program will read the next record. The operator must use his own judgement to determine if the record containing the parity contained critical data.

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- h) NOT FOUND. This printout indicates that the data requested was not found on the tape mounted.
- i) JOB COMPLETE. This printout means that the job is complete.
- j) If the program halts at location 1504 and gives no printout, it is because the Bird Buffer Printer is not ready. The printer should be made ready and the RUN/STEP switch placed in the RUN position. The program will continue from where it halted.
- k) If the program appears to be operating and no printout of data or status or alarm messages occurs, it is because the printers selected for printing are not connected to the computer but are represented by the phantom resume circuit. The program must be allowed to continue until it is finished with its operation. The end of the operation will be apparent when the recording tape is not moved for 30 seconds. At this time, the specified printers must be connected to the Bird Buffer computer and the job reinitiated. There is no reason to halt the computer.

2.4.6 Restrictions. The Bird Buffer Program must be in the non-bird-contact mode.

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2.5 MERGE TAPE

The Bird Buffer Program will merge data from a Telemetry Mode Tape onto the Prepass Tape.

2.5.1 Tape Usage.

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 2 - Initially, the Bird Buffer Prepass Tape, if one exists; or a blank tape.
- c) Tape Unit 3 - Initially, a blank tape.
- d) Tape Unit 4 - Initially, the Telemetry Mode Tape to be merged.

If this is not the initial job request, the Telemetry Mode Tape should be placed on the unit which currently contains the Recording Tape.

2.5.2 Control Card Format.

Cols. 1-4	**04	Identifies the card as a Merge Tape card.
5-6	blank	Always blank.
7	T	T is the logical tape unit that the Telemetry Mode Tape is on.
8-80		These columns are ignored by the program and may be used for further card identification if desired.

2.5.3 Inputs and Environment.

- a) The inputs required are the Prepass Tape (if one exists), the Telemetry Mode Tape, a blank tape, and the control card.
- b) The Bird Buffer program must be cycling in the non-bird-contact mode.
- c) The Bird Buffer Printer should be operating so it can receive any error or status printouts.

2.5.4 Operator Actions.

- a) Insure that the Telemetry Mode Tape is on the proper drive, and that all tapes are ready.

- b) Ready the Bird Buffer Printer if it is not ready.
- c) Place the control card in the reader, and ready the reader.
- d) Inspect any printouts on the Bird Buffer Printer to see if the job was successfully completed.

2.5.5 Error Conditions and Status Printouts.

- a) **ERROR IN JOB CARD.** This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected; the tape unit requested does not exist. Correct the card and re-initiate the job.
- b) **BIRD BUFFER NOT INIT.** This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and re-initiate the job.
- c) **ILLEGAL JOB REQUEST.** This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Re-initiate the job when the Program is in the non-bird-contact mode.
- d) **READY TAPE UNIT X.** This printout occurs if a tape unit that is being used goes not ready. X will be the number of the tape unit. The computer will not halt on this condition, and the job will have to be reinitiated after the tape unit is made ready.
- e) **READY PARITY TAPE X.** This printout means that a parity occurred on a tape unit that was being read. X will be the number of the tape unit. The condition can probably be corrected by moving the tape to another unit (making sure that the logical tape number of this drive is altered as well). The computer will not halt. The job will have to be reinitiated after the error has been rectified.
- f) **WRITE PARITY TAPE X.** This printout means that a parity occurred while a record was being written on a tape. X will be the number of the tape unit. This situation can probably be corrected by using a different blank tape. The computer will not halt, and the job will have to be reinitiated after the error has been corrected.
- g) **FORMAT ERR TAPE X.** This printout means that the first record of tape unit X contains either the wrong identification or the wrong vehicle number. X will be the number of the tape unit. The job will have to be reinitiated after the proper tape is placed on unit X.

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- h) JOB COMPLETE. This printout occurs at the completion of the job. If the job was successful there will be no error printouts preceding this one. If the job was completed unsuccessfully, error printouts will precede the JOB COMPLETE printout.
- i) PREPASS TAPE UNIT X. This printout states which drive the new Prepass Tape is on. X will be the number of the tape unit. The tape unit number may be the same as the original unit, or it may be different.

2.5.6 Restrictions.

The Bird Buffer Program must be in the non-bird-contact mode.

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2.6 CONTACT SITE.

The Bird Buffer Program will initiate contact with the designated tracking station.

2.6.1 Tape Usage.

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 2 - Prepass Tape for the requested station, if any, or blank.
- c) Tape Unit 3 - Blank tape used for updating the Prepass Tape or as an alternate Recording Tape.
- d) Tape Unit 4 - Vehicle Recording Tape or blank.

2.6.2 Control Card Format.

Cols. 1-4	**05	Identifies the card as a Contact Site request.
5-6	blank	Always blank.
7-10	VVVV	Contains the number of the vehicle from which data is to be processed.
11-18	blank	Always blank.
19-20	SS	Contains the number of the site to be contacted.
21-80		These columns are ignored by the program and may be used for further card identification if desired.

2.6.3 Inputs and Environment.

- a) The only inputs required are the tapes as specified above, and the control card.
- b) Jump Key 2. This key is interrogated by the Bird Buffer if the tracking station does not respond to the hello message after five attempts or if the station responds with a misconnection or busy reply. If the key is not set, the program, after printing the appropriate message, will continue to transmit "hello"

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messages if the first condition is true. If the key is set, the program halts with 0077 in the accumulator. The cycle for the first condition can be reinitiated by pressing the run key on the console. See 2.6.5, f) for the result of the latter condition.

- c) Jump Key 4. This key is interrogated when an error is detected in conjunction with the Bird Buffer Printer. If the key is set, the program continues and an attempt will be made to print again after a time delay. If the key is not set, stop key 4 is interrogated; see 2.6.3, d).
- d) Stop Key 4. This key is interrogated after detecting an error in the Bird Buffer Printer if jump key 4 is not set. If the key is set, the program halts with 0053 in the accumulator. Activation of the run key will cause the program to examine the status of the printer immediately and to print if possible. If an error is still encountered, the process described in 2.6.3, c) and d), is repeated.

2.6.4 Operator Actions.

- a) Mount the specified tapes.
- b) Make appropriate jump/stop key settings desired.
- c) Enter the control card. No further action should be necessary.

2.6.5 Error Conditions and Status Printouts.

- a) Bird Buffer Printer error. See 2.6.3, c) and d).
- b) UNABLE TO CONTACT TS. This message is printed if no response is received from the station after five "hello" transmissions. See 2.6.3, b) for recovery procedure.
- c) CCC DISCONNECTED. This message is printed if a phantom resume status response is detected upon selection of the CCC. The switch connection should be examined and hookup made if possible. The program will not halt, but the CCC is cyclically interrogated to initiate message transmission.
- d) IN CONTACT SITE X. This message is printed when the station has been successfully contacted. X will be the station number.
- e) MISCONNECTION SENT. This message is printed if the station response contains a vehicle number or site code different from the data entered on the control card. A misconnection message is also sent to the tracking station.

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- f) MISCONNECTION/BUSY REPLY. This message is printed when the station does not respond or responds with a message indicating misconnection or busy status. The status of jump key 2 determines whether the program will halt. If the halt is activated, the value 0077 is in the accumulator. Further attempts to contact the station will not be made unless the control card is again entered.
- g) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (Cols. 3-4) has been requested; the vehicle number is different from that on the previous INITIALIZE card; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- h) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the program and reinitiate the job.
- i) ILLEGAL JOB REQUEST. This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Reinitiate the job when the program is in the non-bird-contact mode.

2.6.6 Restrictions. The Bird Buffer Program must be in the non-bird-contact mode.

2.7 SEND PREPASS

The Bird Buffer Program will transmit to a site all prepass data not previously sent to that site.

2.7.1 Tape Usage.

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 2 - Initially, the Bird Buffer Prepass Tape.
- c) Tape Unit 3 - Initially, a blank tape.

If this is not the initial job request, then all tape units should remain unchanged from the previous job.

2.7.2 Control Card Format.

Cols. 1-4	**06	Identifies the card as a Send Prepass card.
5-80		These columns are ignored by the program and may be used for further card identification if desired.

2.7.3 Inputs and Environment.

- a) The only inputs required are the Prepass Tape, a blank tape, and the control card.
- b) The Bird Buffer must already be connected to the tracking station that is to receive the data.
- c) The Bird Buffer Program must be cycling in the non-bird-contact mode.
- d) The Bird Buffer Printer should be operating so it can receive any error or status printouts.

2.7.4 Operator Actions.

- a) Insure that the Bird Buffer is already connected to the tracking station.
- b) If this is the initial job, place the tapes on the proper drives and make them ready.

- c) Check the Bird Buffer Printer and make sure it is ready.
- d) Place control card in the reader.
- e) Inspect any printouts on the Bird Buffer Printer to see if the job was successfully completed.

2.7.5 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates that a non-existent job (cols. 3-4) has been requested. Correct the card and reinitiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and reinitiate the job.
- c) ILLEGAL JOB REQUEST. This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Re-initiate the job when the program is in the non-bird-contact mode.
- d) READY TAPE UNIT X. This printout occurs if a tape unit that is being used goes not ready. X will be the number of the tape unit. The computer will not halt on this condition, and the job will have to be reinitiated after the tape unit is made ready.
- e) READ PARITY TAPE X. This printout means that a parity occurred on a tape unit that was being read. X will be the number of the tape unit. The condition can probably be corrected by moving the tape to another unit (making sure that the logical tape number of this drive is altered as well). The computer will not halt, and the job will have to be reinitiated after the error has been rectified.
- f) WRITE PARITY TAPE X. This printout means that a parity occurred while a record was being written on a blank tape. X will be the number of the tape unit. This situation can probably be corrected by using a different blank tape. The computer will not halt, and the job will have to be reinitiated after the error has been corrected.

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- g) **FORMAT ERR TAPE X.** This printout means that the first record of tape unit X contains either the wrong identification or the wrong vehicle number. X will be the number of the tape unit. The job will have to be reinitiated after the proper Prepass Tape is placed on unit X.
- h) **JOB COMPLETE.** This printout occurs at the completion of the job. If the job was successful there will be no error printouts preceding this one. If the job was completed unsuccessfully, error printout will precede the JOB COMPLETE printout.
- i) **PREPASS TAPE UNIT X.** This printout states which drive the new prepass tape is on. X will be the number of the tape unit.
- j) **PREPASS DATA SENT.** This printout indicates that all new prepass data have been successfully transmitted to the station.
- k) **VALIDITY LOW CCC OUT.** This printout means that the tracking station is receiving data with persistent parities. This equipment malfunction will have to be rectified before the job can be successfully completed.
- l) **VALIDITY LOW CCC IN.** This printout means that the STA is receiving data with persistent parities. This equipment malfunction will have to be rectified before the job can be successfully completed.

2.7.6 RESTRICTIONS.

The Bird Buffer Program must be in the non-bird-contact mode.

2.8 TRANSFER CARD PREPASS

Certain types of prepass data may be merged on the prepass tape without the necessity of hooking the Bird Buffer to the 1604. This data will be punched on cards and input directly into the Bird Buffer through the 167 card reader, following the control card described below.

2.8.1 Tape Usage:

- a) Tape Unit 2 - Initially, the Prepass Tape.
- b) Tape Unit 3 - Initially, a blank tape.

2.8.2 Control Card Format:

Cols.	1-4	**07	Indicates that card prepass data is to be merged on the Prepass Tape.
	5-6	blank	Always blank.
	7-10	VVVV	Vehicle number, in decimal.
	11-12	blank	Always blank.
	13-16	RRRR	Revolution number, in decimal to the nearest tenth (no decimal point).
	17-18	blank	Always blank.
	19-20	SS	Site code, in decimal.
	21-22	blank	Always blank.
	23	T	T = Type of prepass data cards which follow this card: <ul style="list-style-type: none"> 1 = commands, 2 = text, 3 = telemetry mode selection, 4 = TRK sampling rate, 5 = scheduling, and 6 = latitude crossing.
	24-80		These columns are ignored by the Bird Buffer Program, and may be used for further card identification if desired.

2.8.3 Inputs and Environment:

- a) The Bird Buffer Program must be cycling in the non-bird-contact mode of operation.
- b) The inputs required are the Prepass Tape, a blank tape, and the control card.

2.8.4 Operator Actions:

- a) Ready the printer if not ready.
- b) Load and ready the Prepass Tape on tape unit 2, and a blank tape on tape unit 3.
- c) Place the card deck (described below) in the card reader, and ready the reader. No further action should be necessary.

2.8.5 Error Conditions and Status Printouts:

- a) There are no program halts.
- b) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: the vehicle number is different from that on the previous INITIALIZE card; a non-decimal value appears where a decimal digit is expected. Correct the card and re-initiate the job.
- c) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and re-initiate the job.
- d) ILLEGAL JOB REQUEST. This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Reinitiate the job when the Program is in the non-bird-contact mode.
- e) READY TAPE UNIT X. This printout indicates that a tape unit being used is not ready. X is the number of the tape unit. Ready the unit and reinitiate the job.
- f) READ PARITY TAPE X. This printout means that a parity occurred on a tape that was being read. X is the tape unit number. Move the tape to another unit and reinitiate the job.
- g) WRITE PARITY TAPE X. This printout means that a parity occurred during a tape write operation. X is the number of the tape unit. Mount a new tape on the unit and reinitiate the job.

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- h) **FORMAT ERR TAPE X.** This printout means that the first record of the tape contains either the wrong identification or the wrong vehicle number. X is the number of the tape unit. Place the proper tape on unit X and reinitiate the job.
- i) **PREPASS TAPE UNIT X.** This printout indicates where the new prepass tape is now located. X is the number of the tape unit. The unit may be the same as the original unit, or it may be a different one.
- j) **NO END CARD FOUND.** This printout signals that an unexpected control card was encountered by the Program before an END card (**99) was found.

2.8.6 Restrictions

- a) The card deck must be set up in the following manner: The first card must be a control card as described above indicating what prepass data is to follow. The data itself may be contained on any number of cards following this card. When the revolution number, site code, or type of data changes, a preceding control card must specify the change. The final card of the deck is an END card (**99). This causes the Bird Buffer to cease looking for prepass data, and to wrap up the job.
- b) The Bird Buffer must be in non-bird-contact mode.

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2.9 TRANSFER SCHOPS.

The Bird Buffer Program will, on request, transfer SCHOPS data from the 1604 computer to the Prepasse Tape or directly to a tracking station.

2.9.1 Tape Usage.

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 2 - Initially, the Bird Buffer Prepasse Tape, if the data is not being sent directly to a site.
- c) Tape Unit 3 - Initially, a blank tape, if the data is not being sent directly to a site.
- d) If this is not the first job request, then all tape units should remain unchanged from the previous job.

2.9.2 Control Card Format.

Cols. 1-4	**08	Identifies the card as a TRANSFER SCHOPS card.
5-18	blank	Always blank.
19-20	SS	Contains the site number to which the transfer is to be made.
21-80		These columns are ignored by the program and may be used for further card identification if desired.

2.9.3 Inputs and Environment.

- a) The only inputs required are the control card and, if the data is being transferred to tape, the Prepasse Tape and a blank tape.
- b) The Bird Buffer must be connected to the proper 1604 computer which must be operating in the satellite mode.
- c) If the Bird Buffer is scheduled to send the data directly to the site, then it must already be connected to, and in contact with, the site. This may require that the CONTACT SITE job be requested before this job is requested.
- d) The Bird Buffer Program must be cycling in the non-bird-contact mode.

- e) The Bird Buffer Printer should be operating so it can receive any error or status printouts.

2.9.4 Operator Actions.

- a) Insure that the Bird Buffer is connected to the proper 1604 computer.
- b) If this is the initial job, place the tapes on the proper drives and make them ready.
- c) If the data is to be sent directly to a station, insure that the Bird Buffer is properly connected to the station.
- d) Check the Bird Buffer Printer to make sure it is ready.
- e) Place control card in reader and ready the reader.
- f) Inspect any printouts on the Bird Buffer Printer to see if the job was successfully completed.

2.9.5 Error Conditions and Status Printouts.

2.9.5.1 If data is being transferred to the Prepass Tape:

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. Some possible errors include: a non-existent job (Cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the program and reinitiate the job.
- c) ILLEGAL JOB REQUEST. This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Reinitiate the job when the program is in the non-bird-contact mode.
- d) NO RESPONSE-1604. This printout means that the 1604 computer did not answer the interrupt from the 160A. The job will have to be reinitiated after the 1604 computer is available for the transfer.

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- e) NO DATA FROM 1604. This printout means that the 1604 computer has no data of the type requested by the 160A. The job will have to be reinitiated after this situation is corrected.
- f) 1604 TRANSFER ERRS. This printout indicates that there are persistent checksum errors in the data being transferred from the 1604. The job will have to be reinitiated after this equipment malfunction is corrected.
- g) 1604 DATA ERROR. This printout indicates that the data received from the 1604 is of the wrong format. The job will have to be reinitiated after the cause of this inconsistency is corrected.
- h) FORMAT ERR TAPE X. This printout means that the first record of tape unit X contains either the wrong identification or the wrong vehicle number. X will be the number of the tape unit. The job will have to be reinitiated after the proper Prepass Tape is placed on unit X.
- i) READY TAPE UNIT X. This printout occurs if a tape unit that is being used goes not ready. X will be the number of the tape unit. The computer will not halt on this condition and the job will have to be reinitiated after the tape unit is made ready.
- j) READ PARITY TAPE X. This printout means that a parity occurred on a tape unit that was being read. X will be the number of the tape unit. The condition can probably be corrected by moving the tape to another unit (making sure that the logical tape number of the drive is altered as well). The computer will not halt. The job will have to be reinitiated after the error has been rectified.
- k) WRITE PARITY TAPE X. This printout means that a parity occurred while a record was being written on a blank tape. X will be the number of the tape unit. This situation can probably be corrected by using a different blank tape. The computer will not halt, and the job will have to be reinitiated after the error has been corrected.
- l) JOB COMPLETE. This printout occurs at the completion of the job. If the job was successful there will be no error printouts preceding this one. If the job was completed unsuccessfully, error printouts will precede the JOB COMPLETE printout.
- m) PREPASS TAPE UNIT X. This printout states which drive the new Prepass Tape is on. X will be the number of the tape unit.

2.9.5.2 If data is being transferred directly to a site.

- a) **ERROR IN JOB CARD.** This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (Cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- b) **BIRD BUFFER NOT INIT.** This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the program and reinitiate the job.
- c) **ILLEGAL JOB REQUEST.** This printout indicates that the Bird Buffer Program is operating in the bird-contact mode. Reinitiate the job when the program is in the non-bird-contact mode.
- d) **NO RESPONSE-1604.** This printout means that the 1604 computer did not answer the interrupt from the 160A. The job will have to be reinitiated after the 1604 computer is available for the transfer.
- e) **VALIDITY LOW CCC OUT.** This printout means that the tracking station is receiving data with persistent parities. This equipment malfunction will have to be rectified before the job can be successfully completed.
- f) **VALIDITY LOW CCC IN.** This printout means that the STA is receiving data with persistent parities. This equipment malfunction will have to be rectified before the job can be successfully completed.
- g) **NO DATA FROM 1604.** This printout means that the 1604 computer has no data of the type requested by the 160A. The job will have to be reinitiated after this situation is corrected.
- h) **1604 TRANSFER ERRS.** This printout indicates that there are persistent checksum errors in the data being transferred from the 1604. The job will have to be reinitiated after this equipment malfunction is corrected.
- i) **1604 DATA ERROR.** This printout indicates that the data received from the 1604 is of the wrong format. The job will have to be reinitiated after the cause of this inconsistency is corrected.
- j) **JOB COMPLETE.** This printout occurs at the completion of the job. If the job was successful there will be no error printouts preceding this one. If the job was completed unsuccessfully, error printouts will precede the JOB COMPLETE printout.

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k) PREPASS DATA SENT. This printout indicates that the SCHOPS data was successfully sent to the station.

2.9.6 Restrictions. The Bird Buffer Program must be in the non-bird-contact mode.

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2.10 SEND TEXT.

A text message may be printed on the STA printers (or sent to a site computer to which the Bird Buffer is connected) regardless of the mode of operation. See 3.5.

3.0 REAL-TIME JOBS

3.1 RESTART.

The Restart card will cause the Bird Buffer Program to be brought up in the bird-contact mode of operation. It is used when the system halts due to a malfunction in real time, or when it must be restarted for operational reasons.

3.1.1 Tape Usage.

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 2 - The Prepass Tape.
- c) Tape Unit 4 - A blank tape for recording.

3.1.2 Control Card Format.

Cols. 1-4	**20	Identifies the card as a Restart card.
5-6	blank	Always blank.
7-10	MMM	Contains the number identifying the Telemetry Mode being used during this pass.
11-80		These columns are ignored by the program and may be used to further identify the card if desired.

3.1.3 Inputs and Environment.

- a) The Bird Buffer Program must be in the computer and the printout, INITIALIZE BB... must appear on the Bird Buffer Printer prior to entering the RESTART card.
- b) Contact with the remote station must be in effect, i.e., the Bird Buffer must be connected to the station.

3.1.4 Operator Actions.

- a) Make certain all equipment is ready.
- b) Place the control card in the card reader and ready the reader.
- c) Be prepared to follow the RESTART card with an INITIALIZE card.

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3.1.5 Error Conditions and Status Printouts.

ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (Cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.

3.1.6 Restrictions.

- a) The Bird Buffer must be in the bird-contact mode.
- b) An INITIALIZE card must follow the RESTART card.

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3.2 CHANGE TRK RATE

In the bird-contact mode (during a pass), the Bird Buffer Program will accept a card which causes a message to be sent to the remote station that effects a change in the reported tracking data. The card may contain information which will (1) change the rate at which tracking data is being reported, (2) change the antennae which are being used for tracking, or (3) suppress or re-activate reporting from one or two antennae.

3.2.1 Tape Usage. Not applicable.

3.2.2 Control Card Format.

Cols. 1-4	**21	Identifies the card as a Change Track Rate card.
5-6	blank	Always blank.
7-8	TT	Contains the number of seconds between reports as a power of two. These columns must always contain the reporting rate even if the rate is not being changed. Following is a list of the values for cols. 7 and 8, and the corresponding reporting rates:

Col 7-8	Track Data Reporting Rate	
00	1 second	between reports
01	2	"
02	4	"
03	8	"
04	16	"
05	32	"
06	64	"
07	128	"
08	256	"
09	512	"
10	1024	"
11	2048	"

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9-10	blank	Always blank.
11-12	ZZ	Identification number of the first or primary antenna. Once an antenna is made the primary antenna, its identification number should not appear in the position of the second antenna in later messages. Zeroes indicate that this antenna is to be or has been suppressed.
13-14	blank	Always blank.
15-16	WW	Identification number of the second antenna. Zeroes indicate that this antenna is to be or has been suppressed.
17-18		These columns are ignored by the program, and can be used for further card identification if desired.

3.2.3 Card Options.

- a) If the reporting rate only is to be changed, the new rate will be in cols. 7-8 and cols. 11-12 and 15-16 will contain the antenna identifications.
- b) If reporting from one or both antennae is to be suppressed, cols. 7-8 will contain the present reporting rate, and those columns corresponding to the antenna to be suppressed will contain zeroes.

3.2.4 Sample Cards.

- a) Change reporting rate for antennas 2 and 5 to 16 sec.

Col.	1234	7-8	11-12	15-16
	**21	04	02	05

- b) Suppress reporting from second antenna but do not change the reporting rate (from 16 sec.) for the first antenna.

Col.	1234	7-8	11-12	15-16
	**21	04	02	00

3.2.5 Inputs and Environment.

- a) The Bird Buffer Program must be in the bird-contact mode of operation.
- b) The only input is the control card.

3.2.6 Operator Actions.

- a) Ready the Bird Buffer Printer if not ready.
- b) Place the control card in the reader and ready the reader. No further action should be required.

3.2.7 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some of the possible errors: a non-existent job (cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and reinitiate the job.
- c) ILLEGAL JOB REQUEST. This printout indicates that either the Bird Buffer Program is not in bird-contact mode, or that the Bird Buffer is not hooked to the tracking computer at the site, or both. Reinitiate the job when the computer is in the correct mode.

3.2.8 Restrictions.

- a) The Bird Buffer Program must be in bird-contact mode and the Bird Buffer must be hooked to the tracking computer at the site.

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b) Only these antenna identification numbers are legal:

00	(used for suppression only)
01	Verlort
02	TIM
04	T&D
05	Prekort
06	Disc-on-rod
07	Quad-Helix

c) No antenna may be requested to report when the remote station is unable to send reports from that antenna. This simply means that if the antenna report is not coming into the T&C computer at the station, it cannot be requested by the STC.

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3.3 REQUEST COMMANDS.

The Bird Buffer Program will request commands for a vehicle from the 1604 computer and send them directly to the tracking station. All commands transferred from the 1604 will be sent immediately to the site.

3.3.1 Tape Usage. Not applicable.

3.3.2 Control Card Format.

Cols. 1-4	**22	Identifies the card as a Request Commands card.
5-6	blank	Always blank.
7-10	VVVV	Contains the number of the vehicle that the commands pertain to.
11-80		These columns are ignored by the program and may be used for further card identification if desired.

3.3.3 Inputs and Environment.

- a) The only input required is the control card.
- b) The Bird Buffer must be connected to the proper 1604 computer which must be operating in the satellite mode.
- c) The Bird Buffer Program must be cycling in the bird-contact mode and connected to the T&C computer at the site.
- d) The Bird Buffer Printer should be operating so it can receive any error or status printouts.

3.3.4 Operator Actions.

- a) Insure that the Bird Buffer is in bird-contact mode, and connected to the T&C computer of the station tracking the vehicle.
- b) Check the Bird Buffer Printer and make sure it is ready.
- c) Place the control card in the reader and ready the reader.

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- d) Inspect any printouts on the Bird Buffer Printer to see if the job was successfully completed.

3.3.5 Error Conditions and Status Printouts.

- a) **ERROR IN JOB CARD.** This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (Cols. 3-4) has been requested; the vehicle number is different from that on the previous INITIALIZE card; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- b) **BIRD BUFFER NOT INIT.** This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the program and reinitiate the job.
- c) **ILLEGAL JOB REQUEST.** This printout indicates that either the Bird Buffer Program is not in bird-contact mode, or that the Bird Buffer is not hooked to the tracking computer at the site, or both. Reinitiate the job when the computer is in the correct mode.
- d) **NO RESPONSE-1604.** This printout means that the 1604 computer did not answer the interrupt from the 160A. The job will have to be reinitiated after the 1604 computer is available for the transfer.
- e) **VALIDITY LOW CCC OUT.** This printout means that the tracking station is receiving data with persistent parities. This equipment malfunction will have to be rectified before the job can be successfully completed.
- f) **VALIDITY LOW CCC IN.** This printout means that the STA is receiving data with persistent parities. This equipment malfunction will have to be rectified before the job can be successfully completed.
- g) **NO DATA FROM 1604.** This printout means that the 1604 computer has no data of the type requested by the 160A. The job will have to be reinitiated after this situation is corrected.
- h) **1604 TRANSFER ERRS.** This printout indicates that there are persistent checksum errors in the data being transferred from the 1604. The job will have to be reinitiated after this equipment malfunction is corrected.

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- 1) **JOB COMPLETE.** This printout occurs at the completion of the job. If the job was successful, there will be no error printouts preceding this one. If the job was completed unsuccessfully, error printouts will precede the **JOB COMPLETE** printout.

3.3.6 **Restrictions.**

- a) The Bird Buffer must be in bird-contact mode, and hooked to the tracking computer at the site.
- b) The Bird Buffer must be hooked to a 1604 computer which is presently operating in the satellite mode, and which is ready to respond with the commands requested.

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3.4 SEND COMMAND.

A command data or real time corrective action message may be sent to the site when the Bird Buffer is in bird-contact mode.

3.4.1 Tape Usage. Not applicable.

3.4.2 Control Card Format.

3.4.2.1 All cards contain the following information in columns 1-20:

Cols. 1-4	**23	Identifies this card as a SEND COMMAND card.
5-6	blank	Always blank.
7-10	VVVV	Vehicle number, in decimal.
11-12	blank	Always blank.
13-16	RRRR or blank	Revolution number, in decimal. If blank, this card contains vehicle-specific information.
17	blank	Always blank.
18	C	C = control and status data.
		1 = command
		4 = real time corrective action
19-20	blank	Always blank.

3.4.2.2 The content of Columns 21-38 depends on the type of command message:
a) Command Data Message.

Cols. 21-24	XXXX	XXXX = command number, in decimal.
25-26	blank	Always blank.
27-30	MMMM	MMMM = message count, in decimal.
31-32	blank	Always blank.
33-36	HHHH	HHHH = bit assignments, in octal.
37-38	blank	Always blank.

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Cols. 39-40	BBBB or blank	BB = bit count of the command word of the data unit, in decimal.
41-42	blank	Always blank.
43-N	DDD...D	D = command data, in octal (up to 20 columns).
N-64	blank	Always blank.
65-68	AAAA or blank	AAAA = duration in seconds that computer should wait before transmitting the next command step of a command block, in decimal.
69-80		These columns are ignored by the Bird Buffer Program, and may be used for further card identification if desired.

b) Real Time Corrective Action Message.

Cols. 21-24	XXXX	XXXX = command number, in decimal.
25-26	blank	Always blank.
27-30	PPPP	PPPP = reply to report number, in decimal.
31-32	blank	Always blank.
33-36	HHHH	HHHH = direction indicators, in octal.
37-38	blank	Always blank.
39-42	YYYY or blank	YYYY = number of times to advance, in decimal.
43-44	blank	Always blank.
45-48	YYYY or blank	YYYY = number that reject level should be set to, in decimal.
49-50	blank	Always blank.
51-54	YYYY or blank	YYYY = number that repetition level should be set to, in decimal.
55-56	blank	Always blank.
57-60	YYYY or blank	YYYY = new command number, in decimal.

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Cols. 61-62 blank Always blank.

63-66 YYYY YYYY = command number of unit to be deleted,
or blank in decimal.

67-80 These columns are ignored by the Bird Buffer
Program and may be used for further card
identification if desired.

3.4.3 Inputs and Environment.

- a) The Bird Buffer Program must be in the computer and operating in the bird-contact mode.
- b) The only input required is the control card.

3.4.4 Operator Actions.

- a) Ready the printer if not ready.
- b) Place the control card in the card reader and ready the reader. No further action should be required.

3.4.5 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (Cols. 3-4) has been requested; the vehicle number is different from that on the previous INITIALIZE card; a non-decimal value appears where a decimal digit is expected; a non-octal value appears where an octal digit is expected. Correct the card and reinitiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the program and reinitiate the job.
- c) ILLEGAL JOB REQUEST. This printout indicates that either the Bird Buffer Program is not in bird-contact mode, or that the Bird Buffer is not hooked to the tracking computer at the site, or both. Reinitiate the job when the computer is in the correct mode.

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3.4.6 Restrictions. The Bird Buffer must be in the bird-contact mode and must be hooked to the tracking computer at the site.

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3.5 SEND TEXT

The Bird Buffer will accept at all times a text card, and print the contents of this card on the Bird Buffer Printer. Depending upon the mode of operation, the card may also control printout of the same message on other printers at the STA and at the site.

3.5.1 Tape Usage. Not applicable.

3.5.2 Control Card Format.

Cols. 1-4	**24	Indicates that one line of text should be printed.
5-6	blank	Always blank.
7-8	PP	Printer(s) on which the message should be printed, in addition to the Bird Buffer Printer. (Anything printed on the Data Analysis Printer will also appear on the Multi-ops Printer.)

Blank = None

01 = Data Analysis (DA)

02 = Data Presentation (DP)

03 = DA, DP

08 = Telemetry computer (TLM)

09 = TLM, DA

10 = TLM, DP

11 = TLM, DA, DP

16 = Tracking and command computer (T&C)

17 = T&C, DA

18 = T&C, DP

19 = T&C, DA, DP

24 = T&C, TLM

25 = T&C, TLM, DA

26 = T&C, TLM, DP

27 = T&C, TLM, DA, DP

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9	E or blank	E causes a page eject before printing.
10	J	J is the number of lines to be skipped before printing. J cannot be greater than 7. If J is zero or blank, the text message will be printed on the next (following) line.
11-80	TT...T	These columns contain the actual text message. Any BCD character which is legal to the 166 printer may be used.

3.5.2.1 Sample card.

Cols. 1-4	7-8	9	10	14-43
**24	10	E	blank	TEXT MESSAGE UP TO 70 CHARACTERS

Contents of this entire card will be logged on the Bird Buffer Printer. The message (including blanks) beginning in column 11, will be printed on the Data Presentation Printer at the STA, and the TLM computer printer at the site if the Bird Buffer is now connected to that computer. In each case, this sample card would cause a page eject before printing.

3.5.3 Inputs and Environment.

The only input is the control card. If output on a site printer is requested, the Bird Buffer must be hooked to that computer.

3.5.4 Operator Actions.

- a) Ready the printer and card reader if not ready.
- b) Place the control card in the card reader. No further action should be required.

3.5.5 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (cols. 3-4) has been requested; skipping of more than 7 lines has been requested; a non-decimal value appears where a decimal digit is expected; the named printer does not exist. Correct the card and reinitiate the job.

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- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and reinitiate the job.

3.5.6 Restrictions.

- a) If output on a site printer is requested, the Bird Buffer must be connected to that computer. If not so connected, an ERROR IN JOB CARD printout will result on the Bird Buffer Printer.
- b) If output on both site printers is requested, and the Bird Buffer is only hooked to one site computer, the message will be printed on this computer's printer before the ERROR IN JOB card printout.
- c) No more than 70 BCD characters per line may be printed.
- d) No more than 7 lines may be skipped before printing. This restriction may be overcome by skipping and printing blank lines (i.e., leave cols. 11-80 of the control card blank).

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3.6 SELECT AND/OR MODIFY TLM MODE.
This card may be used to modify the telemetry mode currently in use by the site, or to select a new telemetry mode for operation. (The new mode may also be modified.)

3.6.1 Tape Usage. Not applicable.

3.6.2 Control Card Format.

a) All cards contain the following information:

Cols. 1-4 **25 Indicates that a telemetry mode change and/or modification is to be made.

5-6 blank Always blank.

7-10 MMM Telemetry mode number, in decimal, which the site is to use.

11-12 blank Always blank.

13 A Telemetry type. Ignored in bird-contact mode.

14-16 blank Always blank.

b) If there is no change to the basic mode information, the remainder of the card is blank. Otherwise:

17-19 PPP Patchboard ID. Ignored in bird-contact mode.

20-21 blank Always blank.

22 P or P indicates this identification is to be processed.
blank If blank, the identification will not be processed.

23-24 blank Always blank.

25 F or E F = fixed format; E = events.

26-27 blank Always blank.

28-30 CCC Identification number, in decimal.

31-32 blank Always blank.

33-36 LLLL Location of the first word in core relative to the frame, in decimal.

37-38 blank Always blank.

39-42 DDDD The number which must be added to LLLL to obtain the second word address, in decimal.

43-44 blank Always blank.

45-46 CC Compression algorithm number, in decimal.

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47-48	blank	Always blank.
49-52	XXXX	Parameters required by the algorithm, in octal.
53-54	blank	Always blank.
55-58	XXXX	Parameters required by the algorithm, in octal.
59-60	blank	Always blank.
61-64	XXXX	Parameters required by the algorithm, in octal.
65-66	blank	Always blank.
67-70	XXXX	Parameters required by the algorithm, in octal.
71-80		These columns are ignored by the program and may be used for further card identification if desired.

3.6.3 Inputs and Environment.

- a) The Bird Buffer Program must be operating in bird-contact mode.
- b) The only input required is the control card.

3.6.4 Operator Actions.

- a) Ready the printer if not ready.
- b) Place the control card in the card reader and ready the reader. No further action should be required.

3.6.5 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected; a non-octal value appears where an octal digit is expected. Correct the card and reinitiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and reinitiate the job.

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- c) ILLEGAL JOB REQUEST. This printout indicates that either the Bird Buffer Program is not in bird-contact mode, or that the Bird Buffer is not hooked to the telemetry computer at the site, or both. Reinitiate the job when the computer is in the correct mode.

3.6.6 Restrictions. The Bird Buffer Program must be in bird-contact mode, and must be hooked to the telemetry computer at the site.

3.7 SUPPRESS TRK PRINTOUT

The Bird Buffer normally prints tracking data on remote printers at the STA as the data is received during bird contact. This job provides the option of suppressing the automatic printing.

3.7.1 Tape Usage. Not applicable.

3.7.2 Control Card Format.

Cols. 1-4	**26	Indicates that the printout of tracking data should be suppressed.
5-6	blank	Always blank.
7-8	AA	Identification of the antenna from which the data printout should be suppressed, in decimal.
9-80		These columns are ignored by the Bird Buffer Program and may be used for further card identification if desired.

3.7.3 Inputs and Environment.

- a) The only input is the control card.
- b) The Bird Buffer must be in the bird-contact mode of operation.

3.7.4 Operator Action.

- a) Check the Bird Buffer Printer to make certain it is ready.
- b) Place the control card in the reader and ready the reader. No further action should be necessary.

3.7.5 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and reinitiate the job.

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- c) **ILLEGAL JOB REQUEST.** This printout indicates that either the Bird Buffer Program is not in bird-contact mode, or that the Bird Buffer is not hooked to the tracking computer at the site, or both. Reinitiate the job when the computer is in the correct mode.

3.7.6 Restrictions.

- a) The Bird Buffer Program must be in bird-contact mode.
- b) Printout of tracking data, once suppressed, is not resumed until specifically requested by means of the REINITIATE TRK PRINTOUT job.

3.8 REINITIATE TRK PRINTOUT

This job will restore printout of tracking data which has been suppressed by the SUPPRESS TRK PRINTOUT job.

3.8.1 Tape Usage. Not applicable.

3.8.2 Control Card Format.

Cols. 1-4	**27	Indicates that the printout of tracking data should be reinitiated.
5-6	blank	Always blank.
7-8	AA	Identification of the antenna from which the data printout should be reinitiated, in decimal.
9-80		These columns are ignored by the Bird Buffer Program and may be used for further card identification if desired.

3.8.3 Inputs and Environment.

- a) The only input is the control card.
- b) The Bird Buffer must be in the bird-contact mode of operation.

3.8.4 Operator Action.

- a) Check the Bird Buffer Printer to make certain it is ready.
- b) Place the control card in the reader and ready the reader. No further action should be necessary.

3.8.5 Error Conditions and Status Printouts.

- a) ERROR IN JOB CARD. This printout indicates an error in at least one column of the control card. These are some possible errors: a non-existent job (cols. 3-4) has been requested; a non-decimal value appears where a decimal digit is expected. Correct the card and reinitiate the job.
- b) BIRD BUFFER NOT INIT. This printout indicates that an INITIALIZE card has not been entered since the Bird Buffer Program was loaded into core. Initialize the Program and reinitiate the job.

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- c) ILLEGAL JOB REQUEST. This printout indicates that either the Bird Buffer Program is not in bird-contact mode, or that the Bird Buffer is not hooked to the tracking computer at the site, or both. Reinitiate the job when the computer is in the correct mode.

3.8.6 Restrictions. The Bird Buffer Program must be in bird-contact mode.

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3.9 **ENABLE 1604.**

This job prepares the 1604 to receive vehicle time and tracking data directly from the site during the next pass. Incoming data will be transferred to the 1604 as soon as received by the Bird Buffer. Recording of vehicle time and tracking data on the Recording Tape will not be altered.

3.9.1 **Tape Usage. Not applicable.**

3.9.2 **Control Card Format.**

Cols. 1-4 **28 Indicates that this is an ENABLE 1604 card.

5-80 These columns are ignored by the Bird Buffer Program, and may be used for further card identification if desired.

3.9.3 **Inputs and Environments.**

- a) The only input for this job is the control card.
- b) The Bird Buffer Program must be in the computer, and the 1604 programs should be ready to receive messages from the Bird Buffer.

3.9.4 **Operator Actions.**

- a) Insure that the Bird Buffer is hooked to the correct 1604.
- b) Ready the Bird Buffer Printer if not ready.
- c) Place the control card in the reader and ready the reader. No further action should be necessary.

3.9.5 **Error Conditions and Status Printouts.**

- a) **ERROR IN JOB CARD.** This printout indicates that a non-existent job (Cols. 3-4) has been requested. Correct the card and reinitiate the job.
- b) **BIRD BUFFER NOT INIT.** This printout indicates that an INITIALIZE

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card has not been entered since the Bird Buffer Program was loaded into core. Initialize the program and reinitiate the job.

- c) NO RESPONSE-1604. This printout means that the 1604 computer did not answer the interrupt from the Bird Buffer. The job will have to be initiated after the 1604 is properly connected to the 160A.

3.9.6 Restrictions. The Bird Buffer must be presently connected to the proper 1604; that is, the 1604 which is to receive the incoming vehicle time and tracking data.

4.0 SITE-INITIATED CONTACT

4.1 As well as responding to the STA's "hello" message (see 2.6), a tracking station connected to the Bird Buffer may itself initiate the information flow. This is done by transmitting a "hello" message as dictated by the sites's scheduling data. Upon receipt of the "hello", the Bird Buffer Program will transmit a "ready" message to the site.

4.1.1 Tape Usage:

- a) Tape Unit 1 - The Bird Buffer Master Tape.
- b) Tape Unit 2 - Prepass Tape for the station indicated by the Bird Buffer schedule, if any, or blank.
- c) Tape Unit 3 - Blank tape used for updating prepass data, or as an overflow Recording Tape.
- d) Tape Unit 4 - Vehicle Recording Tape, or blank.

4.1.2 Control Card Format: Not applicable.

4.1.3 Inputs and Environments:

- a) Tape specified above.
- b) Bird Buffer Printer. The remote printers at the STA are used if available.
- c) Jump Key 2 - Interrogated after printing on the Bird Buffer printer. If Key 2 is set, the system will halt with 0077 in the accumulator.
- d) Jump Key 4 - This key is interrogated when an error is detected in conjunction with the Bird Buffer printer. If the Key is set, the program continues and an attempt will be made to print again after a time delay. If the Key is not set, stop Key 4 is interrogated. (See 4.1.3, e).
- e) Stop Key 4 - This key is interrogated after detecting an error in the Bird Buffer printer and jump Key 4 is not set. If the Key is set, the program halts with 0053 in the accumulator. Activation of the run key will cause the program to immediately examine the status of the printer and print if possible. If an error is still encountered, the process described in 4.1.3, d) and e), is repeated.

4.1.4 Operator Actions:

- a) Mount the specified tapes.
- b) Make appropriate jump/stop key settings.
- c) Ready the printer. No further action should be necessary.

4.1.5 Error Conditions and Status Printouts:

- a) Bird Buffer Printer error. See 4.1.3 d) and e).
- b) IN CONTACT SITE X. This message is logged when a "hello" message is received and the message contains vehicle and site numbers corresponding to those retained by the Program from the previous pass.
- c) HELLO REC'D SITE X. This printout is made when the station number in the "hello" message differs from the current Bird Buffer station number. The system operation as a result of this occurrence includes updating the internally stored fixed messages and the system station number to the value indicated by the "hello" message.
- d) BUSY SENT. This message is printed when the station attempts contact at the same time that a control card is entered requesting job operation.
- e) MISCONNECTION REPLY. This message is printed when the station sends a misconnection message in response to the "ready" message sent by the Bird Buffer. The criterion for transmission of the misconnection is that the ready message contained the wrong site number.
- f) MISCONNECTION SENT. Results from wrong vehicle number in the "hello" message.
- g) CCC PHANTOM RESUME. Used to indicate CCC disconnection.
- h) CCC IN VALIDITY LO. This message is printed when excessive checksum parity errors are encountered in the data from the tracking station.
- i) CCC OUT VALIDITY LO. This message is printed after five unsuccessful attempts have been made to transmit a message to the tracking station.

4.1.6 Restrictions:

Should the printout BUSY SENT occur, contact will only be initiated if the station retransmits the "hello" message, or the operator enters a Contact Site request upon completion of the current job request.

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J. S. Brainard

R. J. Katucki

J. D. Selby

PIR-E4 (GE-3198 Chestnut)

J. F. Butler

C. A. Cummings

H. D. Gilman

PIR-E4 (GE-Bethesda)

A. Pacchioli

PIR-E5 (Aerospace)

F. M. Adair

A. Bakst

J. W. Gengston

R. V. Bigelow

R. O. Brandsberg

L. H. Garcia

G. J. Hansen (3)

L. J. Kreisberg

M. L. Luther

T. R. Parkin

E. E. Retzlaff

H. M. Reynolds

D. Saadeh

R. G. Stephenson

D. D. Stevenson

V. White

5 March 1963

TM(L)-834/002/00

Internal Distribution List

<u>Name</u>	<u>Room</u>	<u>Name</u>	<u>Room</u>
AFCPL (5)	14059	Aldana, J.	24113
Alexander, L. B.	22083	Allfree, D.	22078
Alperin, N. I.	24118A	Armstrong, E.	24089
Becerra, C.	24082	Biggar, D. A. (10)	24090B
Brenton, L. R.	22070	Burke, B. E.	22076
Burke, R. F.	23014	Busch, R. E.	24065B
Bustya, C.	22084	Champaign, M. E.	24127B
Chiodini, C. M.	22078	Ciaccia, B. G.	24082A
Clements, R. F.	24132	Cline, B. J.	24097
Cogley, J. L.	24135	Conger, L.	22079
Crum, D. W.	24093	De Cuir, L. E.	22096A
Derango, W. C.	24082B	Dexter, G. W.	24128
Disse, R. J.	24139	Dobbs, G. H.	24094B
Dobrusky, W. B.	22125	Dugas, R. L.	24105
Ellis, R. C.	24081	Ericksen, S. R.	24110A
Francis, C. W.	20075	Franks, M. A.	25030
Friedman, L.	22083	Gardner, S. A.	22053
Gergen, V. J.	24109	Greenwald, I. D.	24058A
Haake, J. W.	24120	Henley, D. E.	24058B
Hill, C. L.	24057	Hillhouse, J.	24049
Holzman, H. J.	22096B	Hudson, G. R.	22101
Johnson, R. E.	24105	Kastama, P. T.	24053
Katz, M.	24109	Kayser, F. M.	25026
Keddy, J. R.	25026	Key, C. D.	24123
Keyes, R. A.	20073	Kneemeyer, J. A.	24065A
Knight, R. D.	24110B	Knight, R. W.	22095
Kolbo, L. A.	24139	Laughlin, J. L.	20073
La Vine, J.	20079	Little, J. L.	20077
Long, F.	24122	Lytton, J. G.	24077
Madrid, G. A.	22049	Mahon, G. A.	20076
Marioni, J. D.	24076B	Marshall, R. D.	24045
Martin, W. P.	24089	Mc Keown, J.	24121
Milanese, J. J.	24121	Munson, J. B.	24048A
Myers, G. L.	14056A	Ngou, L.	25030
Olson, M. M.	24124	Padgett, L. A.	24085
Patin, O. E.	Sunnyvale	Persico, D. J.	20076
Polk, T. W.	24103	Reilly, D. F.	24085
Rockwell, M.	22070	Scott, R. J.	24093
Seacat, C. M.	Sunnyvale	Seiden, H. R.	22091A
Shapiro, R. S.	25026	Shoel, S. J.	24123
Skelton, R. H.	24127A	Speer, N. J.	20079
Stone, E. S.	22116B	Sweeney, M. J.	24057
Taber, W. E.	22053	Tennant, T. C.	27024
Thompson, J. W.	22077	Totschek, R. A.	24090A

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(Internal Distribution List, Cont.)

<u>Name</u>	<u>Room</u>
Tucker, A. E.	24115
Vorhaus, A. H.	24076A
Weems, S.	24115
Weinstock, M.	22095
West, G. D.	Sunnyvale
West, G. P.	24094A
Williams, H. D.	24091
Wilson, G. D.	22101
Winsor, M. E.	24137
Winter, J. E.	24097
Wise, R. C.	24051
Wong, J. P.	Sunnyvale
Zachte, S. A.	22076

UNCLASSIFIED

System Development Corporation,
Santa Monica, California
MILESTONE 5, VOLUME 2 PRELIMINARY
OPERATING PROCEDURES FOR THE BIRD
BUFFER SYSTEM.
Scientific rept., TM(L)-834/002/00,
by R. J. Scott. 5 March 1963, 65p.
(Contract AF 19(628)-1648, Space Systems
Division Program, for Space Systems
Division, AFSC)

Unclassified report

DESCRIPTORS: Programming (Computers).
Satellite Networks.

Describes procedures used for reading
the Bird Buffer Program into the 1604

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and beginning operations with it.
States that the operational programs
contained on the Bird Buffer Master
Tape have two phases of operation:
bird-contact and non-bird-contact.
Also states that the bird-contact mode
begins after a "real time near" message
is received from a site, and any previous
data not previously sent has been
transferred. Contains descriptions and
operating procedures for all jobs
initiated by the Bird Buffer operator -
including the format of each control
card accepted by the program.

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